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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,990	02/18/2004	Stanley Loren Bentley	6890-74183	3319

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EXAMINER	
LIN, SUN J	

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/780,990	BENTLEY ET AL.	
	Examiner	Art Unit	
	Sun J. Lin	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12,14,15,17-43 and 48-52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20-43 and 48-52* is/are allowed.

6)☒ Claim(s) *1-12,14,15 and 17-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02/18/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 10/27/2006 regarding application 10/780,990 filed on 02/18/2004 has been entered. Amendment and remarks accompanying applicants' submission have been reviewed. Claims 13, 16 and 44 – 47 have been cancelled. Responses are provided as below. Claims 1 – 12, 14, 15, 17 – 43 and 48 – 52 remain pending in the application.

Claim Objections

2. Claims listed below are objected to because of the following informalities:

Claim 1, line 10, before 'manufacturing" insert —**circuit board**—.
Claim 2, line 2, change "transmitting the user interface" to —**the transmitting a user interface**—.
Claim 3, line 2, change "transmitting the user interface" to —**the transmitting a user interface**—.
Claim 4, line 2, change "transmitting the user interface" to —**the transmitting a user interface**—.
Claim 5, line 2, before "receiving" insert —**the**—.
Claim 6, line 2, before "receiving" insert —**the**—.
Claim 7, line 2, before "receiving" insert —**the**—.
Claim 8, line 2, before "receiving" insert —**the**—.
Claim 9, line 2, before "receiving" insert —**the**—.
Claim 12, line 1, before "updating" insert —**the**—.
Claim 14, line 2, before "determining" insert —**the**—.
Claim 15, line 1, change "determining the" to —**the determining a**—.
Claim 15, line 2, change "the per-circuit-board" to —**a per-circuit-board**—.
Claim 18, line 2, before "determining" insert —**the**—.
Claim 20, line 9, after "exceeds" delete —**the**—.
Claim 20, line 13, before "user-supplied" insert —**the**—.
Claim 21, line 2, change "transmitting the user interface" to —**the transmitting a user interface**—.

Claim 22, line 2, change "transmitting the user interface" to **—the transmitting a user interface—**.
Claim 23, line 2, change "transmitting the user interface" to **—the transmitting a user interface—**.
Claim 23, line 3, after "user interface" delete **—application—**.
Claim 24, line 2, before "receiving" insert **—the—**.
Claim 25, line 2, before "receiving" insert **—the—**.
Claim 26, line 2, before "receiving" insert **—the—**.
Claim 27, line 2, before "receiving" insert **—the—**.
Claim 28, line 2, before "receiving" insert **—the—**.
Claim 29, line 2, before "updating" insert **—the—**.
Claim 31, line 20, after "exceeds" delete **—the—**.
Claim 31, line 24, change "of" to **—by updating—**.
Claim 32, line 2, change "transmitting the user interface" to **—the transmitting a user interface—**.
Claim 33, line 2, change "transmitting the user interface" to **—the transmitting a user interface—**.
Claim 34, line 2, change "transmitting the user interface" to **—the transmitting a user interface—**.
Claim 35, line 2, before "receiving" insert **—the—**.
Claim 36, line 2, before "receiving" insert **—the—**.
Claim 37, line 1, change "receiving the" to **—the receiving—**.
Claim 37, line 2, after "receiving" insert **—the—**.
Claim 38, line 1, before "retrieving" insert **—the—**.
Claim 39, line 1, before "retrieving" insert **—the—**.
Claim 40, line 1, before "retrieving" insert **—the—**.
Claim 41, line 1, before "retrieving" insert **—the—**.
Claim 42, line 1, before "retrieving" insert **—the—**.
Claim 43, line 2, change "of" to **—by updating—**.
Claim 49, line 2, before "determining" insert **—the—**.
Claim 50, line 6, after "with" insert **—the—**.
Claim 50, line 12, before "manufacturing" delete **—the—**.
Claim 50, line 17, change "a" to **—the—**.
Claim 51, line 2, before "to retrieve" insert **—said—**.
Claim 52, line 2, before "to retrieve" insert **—wherein said—**.
Claim 52, line 2, before "circuit" delete **—the—**.

Claim 52, line 4, change "the publicly-accessible" to **—a publicly-accessible—**.

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

(1). Determining the scope and contents of the prior art.
(2). Ascertaining the differences between the prior art and the claims at issue.
(3). Resolving the level of ordinary skill in the pertinent art.
(4). Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1 – 12, 14, 15 and 17 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0072956 A1 to *Willems et al.* in view of "*CALS 2 Technical Goat* "(1997) published by *Swedish Defense Material Administration* (called *SDMA* hereinafter).

5. As to Claim 1, *Willems et al.* show and teach the following subject matter:

- A method of designing a (printed) circuit board – [Fig. 2; Figs. 12 –17; Fig. 22; Paragraph 0202];
- *Network Interface*...*User request*...*data entry device* and/or *pointing device* of a *client machine* – [Fig. 24; Fig. 18; Fig. 19]; Network can be viewed as a supply chain – [Paragraph 0011]; circuit board design – [Paragraph 0619]; choosing parts (i.e., components) of current circuit board to minimize circuit board cost – [Paragraph 0612]; Notice that a *user-supplied circuit board design data* (e.g., parts, components of circuit board) can be received from

the *data entry device* and/or *pointing device*, and communicate with a supply chain (e.g., circuit board manufacturer) through a user interface;

- Manufacturing cost...each *item/component* or type information (of circuit board) and its *current value* may be *selected* by a user to be displayed – [Paragraph 0464] each item (component) information my be maintained in database 250 and obtained (retrieved) from (manufacturing cost) database 250 – [Paragraph 0464]; Notice that (1) manufacturing cost database 250 contains value/cost information of a plurality of items/components (2) circuit board manufacturing cost data is retrieved in response to items/components selected by the user associated with the circuit board from a manufacturing cost database;
- *unit manufacturing cost* (UMC), which is defined as the *per unit cost* (i.e., *per-circuit-board manufacturing cost*) – [Paragraph 0008, 0009]. Notice that the *per-circuit-board manufacturing cost* (UMC) is determined using the manufacturing data associated with the user-supplied circuit board;
- In order to select a low cost supply chain, the determined per-unit-board manufacturing cost (UMC) is updated in the user interface and displayed for the user – [page 25, Paragraph 0397, Table 12].

Willems et al. does not teach a method of transmitting a *user interface application* from a server machine to a client machine via a publicly-*accessible-global network* (e.g., *Internet*). But *SDMA* discloses a scheme of *sharing and exchange manufacturing data* (e.g., manufacturing cost data and/or manufacturing capability data), which allows *multiple users* to access all parts of necessary information set *in real time* (sharing) or transfer it *from a remote location* (e.g., a *server machine*) to their own location or *vice versa (exchange)* – [**Sharing and exchange**: Page 51]. *SDMA* also discloses the following subject matter:

- **STEP** (**ST**andard for **E**xchange of **P**roduct Model Data) – for exchange of product information – [Page 81]; Notice that, in the **STEP** group, the product (manufacturing) information is exchanged between a client machine and a server machine;
- **PreAMP** ... *printed circuit (board) assembly* ...*manufacturing capability* ... *shared database access* – [Page 2004 – 2005];

- Databases – for reliable *long term storage* of *very large amount of (product) information* (e.g., *manufacturing cost data* and/or *manufacturing capability* data) – [Page 81];
- Application interfaces at client machines and a server machine – [Fig. 18].

It is well-known in the arts that a *user interface application* is transmitted from a server machine through the Internet, and it can be downloaded on a client machine by a user. Notice that the product manufacturing information (e.g., manufacturing cost data) is retrieved from a database in a server machine in order to share the existing product manufacturing information with a user/designer thereby *reducing development time and cost in manufacturing electronic components/devices* (e.g., circuit boards).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of *SDMA* in transmitting a *user interface application* from a server machine to a client machine via a publicly-accessible-global network (e.g., Internet), to allow a client/user to retrieve the existing circuit board manufacturing cost data from a circuit board manufacturing cost database in a server machine in order to reduce development time and cost in manufacturing a circuit board.

For reference purposes, the explanations given above in response to Claim 31 are called **[Response A]** hereinafter.

6. As to Claims 2 and 3, reasons are included in **[Response A]** given above. It is well-known that the user interface application is transmitted from the server machine via the Internet (i.e., publicly-accessible global network), and is to be downloaded to a client machine in response to a user-supplied (download) request.

7. As to Claim 4, reasons are included in **[Response A]** given above. Notice that a manufacturing capability database and the user interface application associated with user-supplied circuit board design are transmitted from the server machine to the client machine via the Internet, which is a publicly-accessible global network.

8. As to Claims 5 and 6, as explained in **[Response A]** given above, the user-supplied circuit board design data is received by the client machine via a data entry device (i.e., input device). Since SDMA discloses in Fig. 18 that there is a one-to-one correspondence of application interface in a client machine and the server machine, the user-supplied circuit board design data is received by the server machine via the Internet.

9. As to Claim 7, in addition to reasons included in **[Response A]** given above, *Willems et al.* teach equipped database in computer system in both client machines and the server machine – [Fig. 18; Fig. 20]. It is inherent that the circuit board manufacturing cost data and/or circuit board manufacturing capability data retrieved from the server machine can be stored in the database equipped in the client machine for future retrieval.

10. As to Claims 8 and 9, reasons are included in **[Response A]** given above.

11. As to Claims 10, reasons are included in [Response A] given above. Notice that *SDMA* discloses manufacturing capability descriptions (i.e., manufacturing capability data) and shared (manufacturing) database – [Page 204; PreAMP].

12. As to Claims 11 and 12, in the STEP, the circuit board manufacturing capability database is a *long term storage*, which supplies reliable up-to-date board manufacturing capability data to all client machine in the STEP Tools model; data in the user interface application is updated whenever a "update" bottom is push and/or a new board manufacturing capability data is available. It is a standard that whenever a data in the user interface application is changed (i.e., updated), a *traffic light image* (e.g., an indication marker which blinking and/or changing color) is displaced on the screen.

13. As to Claims 14 and 15, *Willems et al.* teach that a supply chain (i.e., work center) is selected based on its product's *unit manufacturing cost* (UMC), which is defined as the *per unit cost* (i.e., per-circuit-board manufacturing cost value) of a

completed finished good item (i.e., circuit board)...overhead costs (i.e., setup cost value) ...process engineering costs & processing costs (i.e., run cost value) – [Paragraph 0008]. Notice that the overhead costs (setup cost value) and process engineering costs & processing costs (run cost value) of a circuit board are different for different work center (i.e., supply chain) of a circuit board manufacturing process.

In order to select a low cost supply chain, the UMC (per-unit-board manufacturing cost value) should be updated and displayed for a user – [page 25, Paragraph 0397, Table 12].

For reference purposes, the explanations given above in response to Claims 13 – 16 are called **[Response B]** hereinafter.

14. As to Claims 17 and 18, reasons are included in **[Response B]** given above. Notice that the process engineering costs & processing costs include tooling cost value.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0072956 A1 to *Willems et al.* and "*CALS 2 Technical Goat* "(1997) published by *SDMA* in view of U.S. Patent No. 6,496,957 to Kumagai.

16. As to Claim 19, *Willems et al.* and *SDMA* show and teach all subject matter recited in Claims 1; they do not disclose retrieving a circuit board design image based on a user selected-portion of the user interface application and displaying the circuit board image on the client machine to a user. But *Kumagai* shows in Fig. 1 and teaches determining a user selection-portion of circuit board design using a CAD tool, retrieving a circuit board design image based on the user selected-portion and displaying the circuit board design image on the client machine to a user, which is well-known utilized in the manufacturing and/or supply chain in order to efficiently and accurately retrieve cost and/or capability/availability information from a server machine through the Internet.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have applied the teachings of *Kumagai* in

determining a user selection-portion of circuit board design based on a user interface application and retrieving a circuit board design image based on the user selected-portion on the user interface application and displaying the circuit board design image on the client machine in order to efficiently and accurately retrieve cost and/or capability information from a server machine through the Internet.

Allowable Subject Matter

17. Claims 20 – 43 and 48 – 52 are allowed. Those claims are allowed is because that the prior art does not teach or fairly suggest the following subject matter:

- A method for designing a circuit board, the method comprising *determining whether a user-supplied circuit board design data entered in a user interface exceed manufacturing capability of a circuit board manufacturer based on a comparison of the user-supplied circuit board design data and circuit board manufacturing capability data retrieved from a manufacturing capability database* and ***updating the user interface if the user-supplied circuit board design data exceeds the manufacturing capability of the circuit board manufacturer*** in combination with other limitations as recited in independent **Claim 20** and **Claim 31**, respectively;
- An article comprising a computer-readable signal-bearing medium having therein a plurality of instructions which, when executed by a processor, cause the processor *determine whether a circuit board design data supplied by a user exceed manufacturing capability of a circuit board manufacturer based on a comparison of the circuit board design data and circuit board manufacturing capability data retrieved from a manufacturing capability database* and ***notifying the user if the circuit board design data exceeds the manufacturing capability of the circuit board manufacturer*** in combination with other limitations as recited in independent **Claim 50**.

Response to Amendment and Remarks

18. Applicants' arguments, based on amended claims, accompanying the RCE filed on 10/27/2006 have been fully considered. Responses to the arguments are included in the Office Action given above.

Conclusion

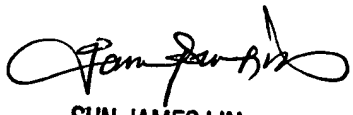
19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Sun James Lin* whose telephone number is (571) 272 - 1899. The examiner can normally be reached on Monday-Friday 9:30AM - 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, *Jack Chiang* can be reached on (571) 272 - 7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (in USA or CANADA) or 571-272-1000.

All responses to this Office Action should be mailed to ***Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450*** or faxed to ***571-273-8300***.

Sun James Lin
Primary Examiner
Art Unit 2825



SUN JAMES LIN
PRIMARY EXAMINER